DATA INTERFACE TEST SET
MODEL 505-2
Identification, Connections, and Maintenance

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Instrumentation & Control
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DATA INTERFACE TEST SET
MODEL 505-2

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1. INTRODUCTION

The Model 505-2 Data Interface Test Set is a portable, ac powered unit that is used to isolate data transmission troubles between data terminal equipment and data transmission equipment. It is designed for use in systems that follow the engineering standard outlined in the Electronic Industries Association (EIA) Standard RS-232-B, Interface between Data Processing Terminal Equipment and Data Communication Equipment.

Although this manual describes the use of the Model 505-2 Data Test Set in general terms, specific application data is welcomed by Pulsecom. This specific application data will be supplied to all users in the form of application notes, and if they are fully universal, they may be appended to this manual.

2. GENERAL

2.1 The test set displays the ON (+12 v space) or OFF (-12 v mark) condition existing on the interface leads between the data processing terminal equipment and the data communication equipment. All twenty-five leads are available at test points on the front panel. Access points to the data terminal and the data communication equipment are available independently or simultaneously (continuity through test set). Nine leads are permanently displayed by lamp for continuous monitoring. Three spare display lamps are available for patching to any of the remaining sixteen leads. All leads are accessible at tip-jacks mounted

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on the front panel.

2.2 Control battery, -12 V OFF, +12 V ON, is available at eight terminals (each) for patching to any desired lead. A 3.3K ohm current limiting resistor is in series with each lead.

A 3K ohm resistor is available for applying maximum EIA load to any individual lead.

3. DESCRIPTION

The Model 505-2 Data Test Set is housed in a portable carrying case that is 4-1/2" deep, 8-1/2" wide and 8-3/4" high. All controls and indicators are on the front surface, while the interface lead and power cord feed from a well located on the end of the unit. This well also holds the patch cords when they are not in use. A cover completely encloses the front of the unit when it is not in use, thus giving full protection to the operating panel when the test set is being carried or stored. The inside of the cover is used to mount a diagram showing the EIA lines and their nomenclature. Also to be found in the front cover is a clip holding a spare fuse.

4. ELECTRICAL CHARACTERISTICS

LAMPS

Transmit and Receive Data:	OFF (marking) = -3.0v minimum ON (spacing) = +3.0v minimum
Rapid flashing	Low data speed
Dim	High data speed
No lamps lighted	Voltage less than 3v or lead open.
Control:	
Lighted	+3v minimum
Not lighted	-3v, positive less than ground or open circuit
Lamp monitor input impedance	22K ohms nominal
Permanent monitors	Leads, 2,3,4,5, 6,8,11,12,20
Test set ground	Normal: tied to lead 7 External: appears at pin jack for patch to desired lead
Power	117 v ac
Size	8-1/2 x 8-3/4 x 4-1/2 in.
Weight	7 lb.

5. OPERATION

5.1 General. The Model 505-2 Data Interface Test Set is placed between the data terminal equipment, such as a computer interface, and the data transmission equipment, such as a telephone data set. The following paragraphs outline the general procedure for using the data set, and the functions of the controls and indicators on the data set.

5.2 Through Circuit Control and Indicators. The controls and indicators on the Model 505-2 Data Interface Test Set are outlined with reference to the Simplified Diagram, Figure 2. There are three types of circuits through the 505-2 test set, plus the signal common.

(a) Pin 1 Data Set to Pin 1 Terminal is a straight through wire with a switch that allows the circuit to be opened. Test points on either side of the switch allow the circuit to be monitored under normal conditions, the voltage at the Data Set (white test point), or the Terminal Device (brown test point) can be observed. Circuits 9,10,13,14,15,17, 18,19,21,22,23,24, and 25 are also of this type.

(b) Pin 2 Data Set to Pin 2 Terminal is also a through circuit with a switch and two test points, one to either side of the switch. In addition, a monitor circuit is fix-wired to the set side (brown test point). If a voltage of +3 v dc or greater (more positive) is applied to the Data Set 2 pin, the BA2 ON Lamp will light. If a voltage of -3 v dc or greater (more negative) is applied to the Set 2 pin, the BA2 OFF lamp will light.

(c) Pin 4 Data Set to Pin 4 Terminal operates the same as example (b) except that there is only one lamp. This lamp (CA4) will come ON when the voltage on Data Set pin 4 is +3 v dc or greater. There is no lamp for OFF (-3 v or more).

(d) Pin 7 Data Set to Pin 7 Terminal is used for circuit common. Switch 7 can be used to open this path. The Model 505-2 gets is signal ground from this source, or from some external source. The SIG GND switch is used to make this selection. If the SIG GND switch is in the INT position, the 505-2 will get its signal common reference from the pin 7 circuit. Notice that this connection is made on the Data Set side of the switch 7. If the SIG GND switch is in the EXT position, a signal reference must be plugged into the black EXT jack so that the monitor circuits will have a return path.

CAUTION

NOTE: The common that is on pin 7 is the signal common. IT IS NOT THE SAFETY (FRAME) COMMON. THE SAFETY (PROTECTIVE GROUND) COMMON IS ON CIRCUIT 1. IF SWITCH 1 IS OPENED, THE CONNECTION BETWEEN THE FRAME OF THE TERMINAL EQUIPMENT AND THE DATA SET EQUIPMENT WILL BE REMOVED.

5.3 Data Test Set Auxiliary Circuits.

There are certain circuits provided for the convenience of the operator to ease the testing process. These circuits provide three functions: (a) Spare Monitors; (b) Signal Level Source; (c) and a Dummy Load.

(a) Spare Monitors. There are three spare monitor circuits. The SP1 jack (yellow) is used to drive the circuit that controls the SP1 lamp (yellow). This circuit is used to monitor those circuits that do not have a permanent monitor such as pin 15, DB (Transmitter signal element timing). If a jumper is placed between the SP1 jack and the SET or TERM jack for circuit 15, an ON (+3 v dc or greater) condition will light lamp SP1. If switch 15 is then opened the jumper can be moved to the SET and TERM jack to determine the source of the voltage. Spare monitor SP3 operates in the same manner as SP1.

Monitor SP2 has two additional features: (1) it has a lamp for ON (+3 v dc or greater) and OFF (-3 v dc or more negative); (2) it has a Pulse Trap circuit. To use this circuit, a jumper is placed between the SP2 jack (yellow) and the circuit to be monitored. The circuit will light the SP2 ON lamp with an input of +3 v dc or greater, and will light the SP2 OFF lamp for inputs of -3 v dc or more negative. The minimum duration for which the lamp will light for any given transient input signal is controlled by the Pulse Trap Circuit. If a transient impulse occurs (either +ON or - OFF) the proper lamp will flash long enough to be seen even though the transient is of too short a time to normally be seen.

(b) There are two banks of steady signal levels available for testing use. A set of ON +12 v (red) jacks provides an ON signal, each jack through its own 3.3K Ω resistor. For example: If it is desired to hold ON the request to send (pin 4 CA) to the data set regardless of what the terminal equipment is doing, OPEN switch 4 and place a jumper from a RED +12 v ON jack to the WHITE SET jack for pin 4. Now, the CA line will hold a steady +12 v and the CA4

Table 1

Pin Assignments for 25 Pin EIA Standard Interfacing

Pin No.	Circuit	Description
1	AA	protective ground
2	BA	transmitted data
3	BB	received data
4	CA	request to send
5	CB	clear to send
6	CC	data set ready
7	AB	signal ground
8	CF	data carrier detector
9	--	Reserved for data set testing. These two pins shall not be wired in the data processing terminal equipment.
11	--	unassigned
12	--	unassigned
13	--	unassigned
14	--	unassigned
15	DB	transmitter signal element timing (data communication equipment source)
16	--	unassigned
17	DD	receiver signal element timing (data communication equipment source)
18	--	unassigned
19	--	unassigned
20	CD	data terminal ready
21	--	unassigned
22	CE	ring indicator
23	--	unassigned
24	DA	transmitter signal element timing (data processing terminal equipment source)
25	--	unassigned

Unassigned circuits may be assigned by mutual agreement of the parties on both sides of the interface.

REQ TO SEND lamp will stay lighted.

(c) The black 3K jack provides a full EIA load for circuit termination as required.

5.4 Lamp Test. The lamp test pushbutton will light all lamps when depressed. Also, if this pushbutton is quickly depressed and released (a quick tap), the SP2 ON OFF lamps will flash long due to the pulse trap circuit.

5.5 Pin Identification. RS-232-B assigns the 25 pins as listed in Table 1.

5.6 FIXED MON Lamps. The nine leads arranged for permanent display are those often encountered in the serial type EIA configuration. They are listed in Table 2.

Table 2

Fixed Monitor Leads

Lead	Description
2	transmitted data
3	received data
4	request to send
5	clear to send
6	data set ready
8	data carrier detector
11	originate mode
12	local mode
20	data terminal ready

6. CIRCUIT DESCRIPTION

The following circuit description is divided into two parts. First to be described are the monitor circuits. Second to be described are the other miscellaneous circuits.

6.1 Monitor Circuits. There are three types of monitor circuits: (a) Single Lamp; (b) Double Lamp; and (c) Double Lamp with Pulse Trap.

6.1.1. Single Lamp Circuits. Lamp DS5 ("4") is driven from a typical single lamp circuit. Transistors Q10 and Q9 are connected to form the monitor circuit. Any positive signal (+3 v or more) through resistor R20 from either the set, or the terminal through S18 will cause transistor Q10 to conduct and supply base current for transistor Q9, thus lighting lamp DS5 ("4") when Q9 conducts, Diode CR10 protects the base to emitter junction of transistor Q10 during negative signals.

6.1.2 Double Lamp Circuit. Lamps DS3 and DS4 are the two lamps for monitoring line 3 (REC DATA). Lamp DS3 is lighted for an ON (+3 v or more) signal from pin 3 through R12. With a plus (ON) signal, transistor Q6 will conduct to supply base current to transistor Q5, thus lighting lamp DS3 when Q5 conducts. Lamp DS4 is lighted for OFF (-3 v dc or more negative) signals. An OFF signal from line 3 will cause transistor Q8 to conduct and drive the base of transistor Q7, thus turning transistor Q7 on to light lamp DS4. Transistor Q34 is part of the lamp test circuit to be explained in the miscellaneous circuits description.

6.1.3 Double Lamp Circuit with Pulse Trap. Lamps DS14 and DS13 are driven by the spare 2 circuit. This circuit lights lamp DS13 for ON signals (+V), and lamp DS14 for OFF signals (-V).

6.1.3.1 Plus (ON) circuit. Transistors Q27, Q26, and Q25 are connected to form the ON Pulse Trap Circuit. This circuit takes the form of a one-shot. With the input at the spare 2 (SP2) jack less than +3v or open, transistor Q27 will not be conducting, transistor Q25 will be conducting, thus holding transistor Q26 off through R53. With transistor Q26 off, capacitor C3 will be charged to nearly 12 volts through the emitter-to-base junction of Q25, CR26, and R50. Should the input at the spare 2 jack go positive (+3v or more) transistor Q27 will conduct at once, driving the base of Q26, causing transistor Q26 to conduct hard and drive the lamp. This turn on is very fast, just a few microseconds. Now the +side of C3 is at common and the R50 side is at approximately -12 volts. Under this condition, transistor Q25 will stay off until capacitor C3 discharges and transistor Q26 will be held on with the current through R53 regardless of whether transistor Q27 stays conducting. This way, for a short transient, the light will flash. If the input stays plus until capacitor C3 discharges, transistor Q25 will again conduct, but transistor Q27 will hold Q26 on to keep the lamp lighted. Now, should the signal be removed, transistor Q27 and Q26 will stop conducting at once to turn off the lamp.

6.1.3.2 Negative (OFF) circuit. Transistors Q30, Q29, and Q28 form the OFF circuit to drive DS14, the OFF spare 2 lamp. This circuit functions in the same manner as the circuit in paragraph 6.1.3.1 except that PNP transistors are used to detect a -3v or more negative signal or transient. There are two miscellaneous circuits to be described: (a) the Lamp Test Circuit; and (b) the Power Supply.

6.2.1 Lamp Test. The lamp test circuit is activated when the LAMP TEST pushbutton (S27) is depressed. This action furnishes a current source through a diode (each lamp has its own diode) to all lamps that return to +12 volts — for example: Diode CR1 and lamp DS1. Those lamps that return to -12 volts are driven by transistors via diode CR3, for example: Transistor Q33 drives lamp DS2.

6.2.2 Power Supply. Operating voltage at +12 v dc and -12 v dc are furnished by the power supply. Transformer T1 steps the 115v ac 60 Hz line down for half-wave rectification by diode CR32 which furnishes the -12 volts. Diode CR31 and CR33 form the full-wave rectifier for the +12 volt supply.

7. MAINTENANCE

7.1 General. The Model 505-2 Data Interface Test Set is a solid state device. Normal logic circuit troubleshooting techniques will enable the technician to determine if the unit is malfunctioning. Section 6, Circuit Description will aid the technician to isolate trouble.

7.2 Pulsecom does not recommend repairs be performed in the field. Repair services are available and may be obtained by returning the defective unit to the factory. Return authorization is required. Notify Pulsecom of your service requirements by contacting the Repair Department at the following address prior to shipping the unit.

PULSECOM
Division of Harvey Hubbell, Inc.
5714 Columbia Pike
Falls Church, Virginia 22041
Telephone: (703) 820-0652
Telex: 89-9423

8. PARTS ORDERING INFORMATION

8.1 The following guide may be used as an aid to identify the assemblies and the associated components used with the equipment model number covered by this manual. As shown in Figure 3 the area above the assembly drawing title block is the List of Materials for the assembly. To order an assembly, sub-assembly or associated component, the information shown in Figure 3 must be provided to identify the material.

8.2 Generally all of Pulsecom equipment models are given top assembly drawing numbers which may contain as part of the list of materials other drawings which further break down the sub-assemblies within the main equipment. For example: plug-in assemblies would be listed as materials on the top assembly drawing for the equipment; however, associated components mounted on the plug-in assembly would be listed as materials on the assembly drawing for the plug-in board. When the plug-in board is being ordered, the information on the assembly drawing for the board should be used.

9. DRAWINGS

9.1 The referenced figures in the text and the engineering drawings which provide support technical information are listed below.

Figure 1.	Model 505-2, Data Interface Test Set.
Figure 2.	Model 505-2, Simplified Diagram.
Figure 3.	Parts Ordering Guide.
B501665	Mother Board Assembly, Model 505-2
D100475	Data Interface Test Set Assembly, Model 505-2
D501668	Board, P.C. Assembly, Test Set, Model 505-2
D501670	Board, P.C. Assembly, Test Set, Model 505-2
E200483	Schematic, Data Interface Test Set, Model 505-2.

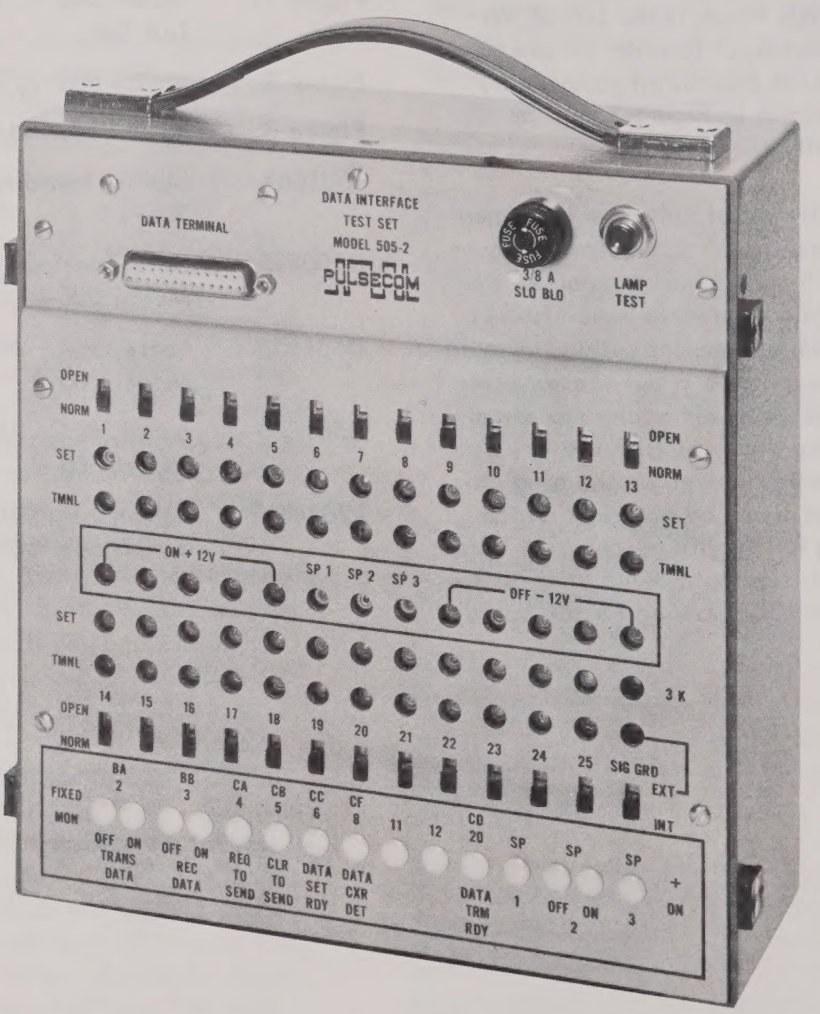


Figure 1. Model 505-2, Data Interface Test Set.

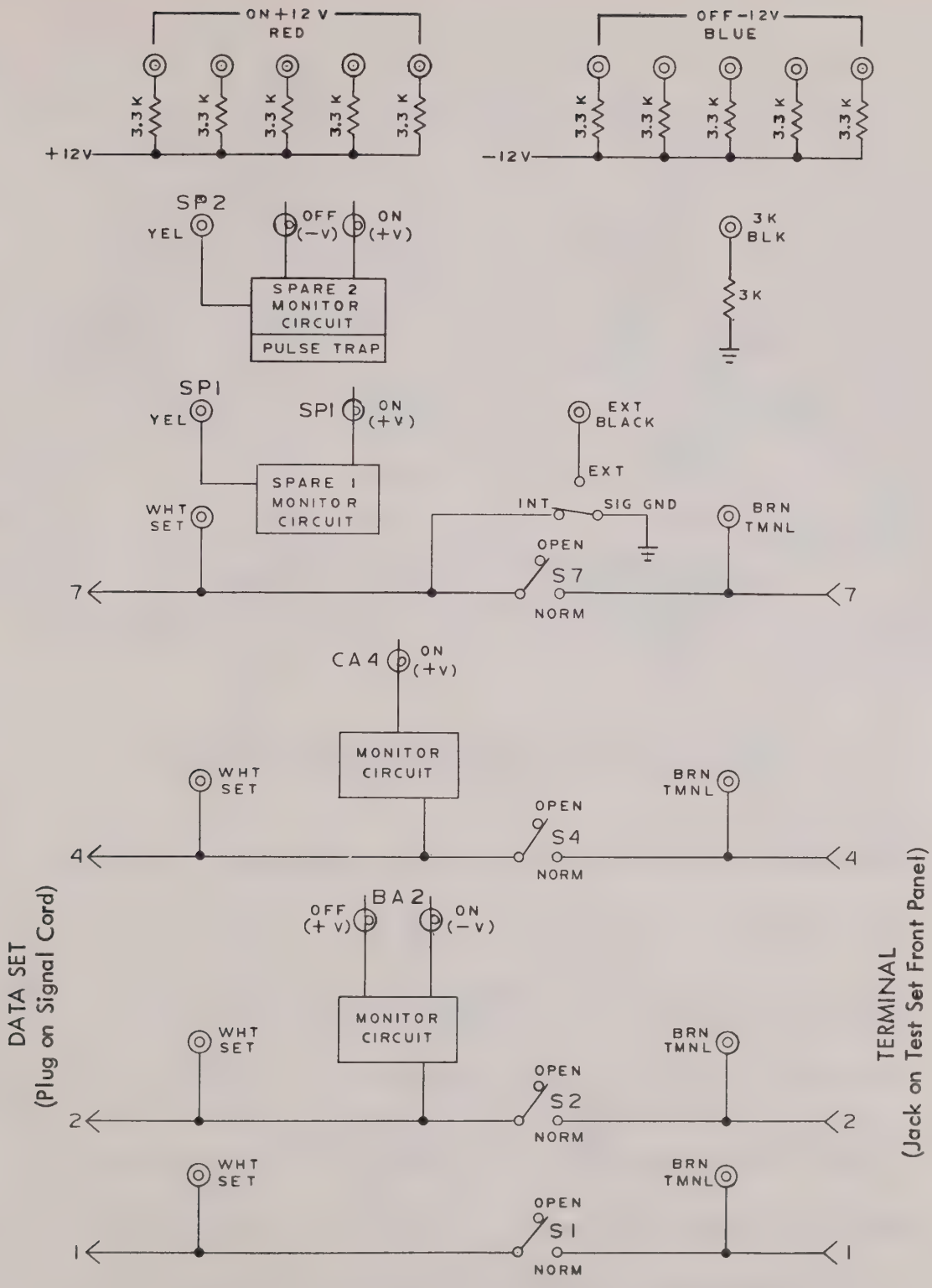
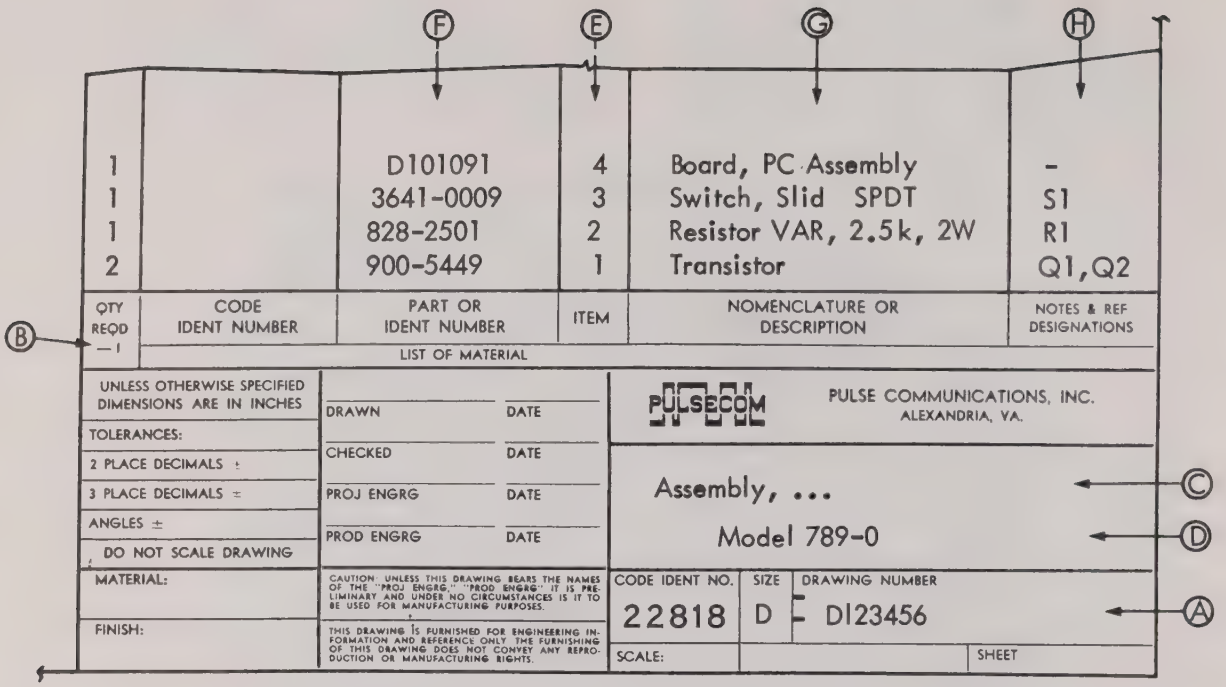


Figure 2. Model 505-2, Simplified Diagram.



QTY REQD — I	CODE IDENT NUMBER	PART OR IDENT NUMBER	ITEM	NOMENCLATURE OR DESCRIPTION	NOTES & REF DESIGNATIONS
1		D101091	4	Board, PC Assembly	-
1		3641-0009	3	Switch, Slid SPDT	S1
1		828-2501	2	Resistor VAR, 2.5k, 2W	R1
2		900-5449	1	Transistor	Q1,Q2

LIST OF MATERIAL

Ⓑ

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
DO NOT SCALE DRAWING
MATERIAL:
FINISH:

DRAWN DATE
CHECKED DATE
PROJ ENGRG DATE
PROD ENGRG DATE

CAUTION: UNLESS THIS DRAWING BEARS THE NAMES OF THE "PROJ ENGRG," "PROD ENGRG" IT IS PRELIMINARY AND UNDER NO CIRCUMSTANCES IS IT TO BE USED FOR MANUFACTURING PURPOSES.

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Assembly, ... Ⓒ

Model 789-0 Ⓓ

CODE IDENT NO.	SIZE	DRAWING NUMBER
22818	D	DI23456 Ⓐ

SCALE: SHEET

Information Required For Identification Of Material Odered

Reference Drawing No: Ⓐ Qty Req Code: Ⓑ

Title Of Drawing: Ⓒ

Associated Equipment Model No.: Ⓓ Assembly/Component Item No.: Ⓔ

Part Number: Ⓕ Description : Ⓖ

Reference Designation: Ⓗ Quantity Ordered: _____

Name/Title of Person Ordering: _____

Name and Address of Firm Ordered From : _____
(Include Department)

Send ToMailing Address : _____

REVISIONS					
NO/SYM	DESCRIPTION	DATE	BY	CHK	APPD



QTY REQD — 1	CODE IDENT NUMBER	PART OR IDENT NUMBER	ITEM	NOMENCLATURE OR DESCRIPTION	NOTES & REF DESIGNATIONS
4		610-0011	4	TERMINAL ROLLOVER	
1		4000-0018	3	CONNECTOR, PC	18 PIN
1		4000-0015	2	CONNECTOR, PC	15 PIN
1		C501662-1	1	BOARD, PC	

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES:

2 PLACE DECIMALS ± —

3 PLACE DECIMALS ± —

ANGLES ±

DO NOT SCALE DRAWING

MATERIAL: —

FINISH: —

DRAWN W. GLEADALL	DATE 6 NOV '69
CHECKED W. GLEADALL	DATE 19 DEC '69
PROJ ENGRG	DATE APRIL 16
PROD ENGRG	DATE 2/5/70
M. Y. Jones QC	5 FEB 70

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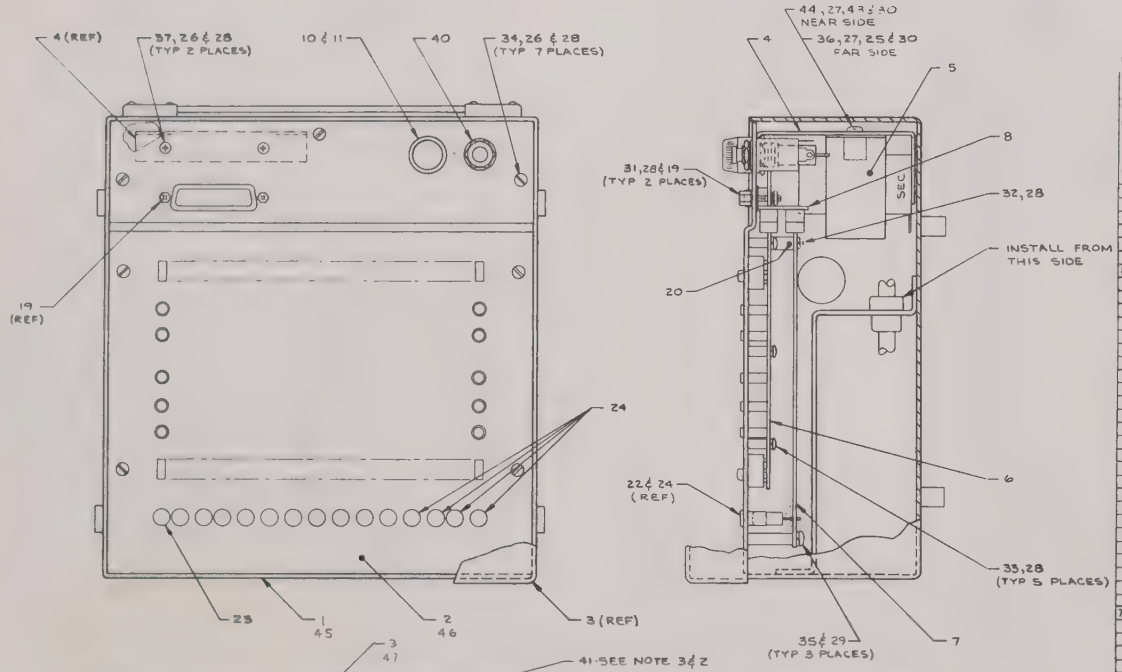
MOTHER BOARD ASSY (MODEL 505-2)

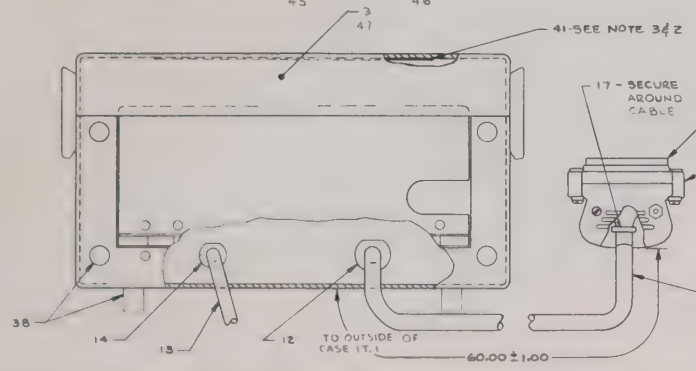
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SCALE: 2/1 SHEET

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REVISIONS					
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A	REV PER ACO 3286	7-20-70	RTK		JVG
B	REV PER ACO 3399	11-18-70	GG	JVG	JVG
C	REV PER CO 3538	4-12-71	F.R.	JVG	JVG
D	ADD -2	6-6-73	WG	JVG	JVG





NOTES:
1. ITEMS 8 & 21 TO BE SUPPLIED WITH UNIT.
2. BOND ITEM 41 (IDENT PLATE) IN PLACE USING RUBBER CEMENT:
   A. APPLY ONE COAT OF CEMENT TO BACK OF IDENT PLATE & SURFACE INDICATED ON ITEM 3
   B. LET DRY
   C. PRESS TOGETHER & RUB OFF EXCESS CEMENT.
3. CENTER ITEM 41 (IDENT PLATE) BETWEEN SPARE LAMP, SPARE FUSE CLIPS AND BOTTOM EDGE OF COVER.

PHILCO FORD CORP SIERRA OPN
PULSECOM 505-2

QTY REQD -2	QTY REQD -1	CODE IDENT NUMBER	PART OR IDENT NUMBER	ITEM	NOMENCLATURE OR DESCRIPTION	NOTES & REF DESIGNATIONS
				48		
1	0		D501663-2	47	COVER	
1	0		D501661-2	46	PANEL	
1	0		D501660-2	45	CASE	
1	1		105-3407	44	SCREW, BND HD #6-32	1/2 LG
1	1		B500042-5	43	CLAMP, CABLE, .381D	
REF	REF		E200483	42	SCHEMATIC	
1	1		C501640	41	PLATE, IDENT	
1	1		3573-0015	40	SWITCH, PUSH BUTTON	S2T
1	1		D501667-1	39	WIRING DIAGRAM	
8	8		3439-0002	38	RIVET, NYLON	
2	2		101-3406	37	SCREW, BND HD #4-40X7/16	CROSS RECESS
1	1		105-3406	36	SCREW, BND HD #6-32	7/16LG
3	3		105-3405	35	" " #6-32	3/8 LG
7	7		104-3405	34	" " #4-40	3/8 LG
5	5		104-3403	33	" " #4-40	1/4 LG
1	1		104-3410	32	SCREW, BND HD #4-40	3/4 LG
2	2		648-3403	31	NUT, HEX, #4-40	
2	2		652-2206	30	NUT, HEX, #6-32	
3	3		618-3405	29	WASHER, LOCK #6	
17	17		618-3403	28	" LOCK #4	
2	2		617-3406	27	" FLAT #6	LARGE
9	9		617-3404	26	WASHER, FLAT #4	LARGE
1	1		3494-0001	25	LUG, SOLDER, LOCKING #6	
4	4		4305-0020	24	LENS, YELLOW	
11	11		4305-0019	23	LENS, WHITE	
16	16		87-0004	22	LAMP, 14V@.08A	
2	2		3450-0001	21	PATCH CORD	SEE NOTE 1
1	1		3504-0001	20	SPACER, 1/4 OD	7/16 LG
2	2		B502014-1	19	STANDOFF, #4-40	
1	1		3650-0001	18	CONN. PLUG	
1	1		3629-0001	17	CORD, CLAMP	
78 IN	78 IN		3620-0005	16	CABLE, #27 AWG, 25 COND	
1	1		3650-0003	15	SHELL JUNCTION	
1	1		3456-0002	14	STRAIN RELIEF	
1	1		3467-0006	13	POWER CORD	
1	1		3455-0001	12	STRAIN RELIEF	
2	2		3347-0058	11	FUSE 3/8A SLO BLO	F1, SPARE
1	1		3488-0001	10	HOLDER, FUSE	XF1
6	6		B501360-1	9	PATCH CORD	SEE NOTE 1
1	1		B501665-1	8	BD. P.C. ASSY	
1	1		D501670-1	7	BD. P.C. ASSY	
1	1		D501668-1	6	BD. P.C. ASSY	
1	1		C501265	5	TRANSFORMER	T1
1	1		C501671-1	4	BRACKET, SUB ASSY	
0	1		D501663-1	3	COVER	
0	1		D501661-1	2	PANEL	
0	1		D501660-1	1	CASE	

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
DO NOT SCALE DRAWING
MATERIAL:
FINISH:

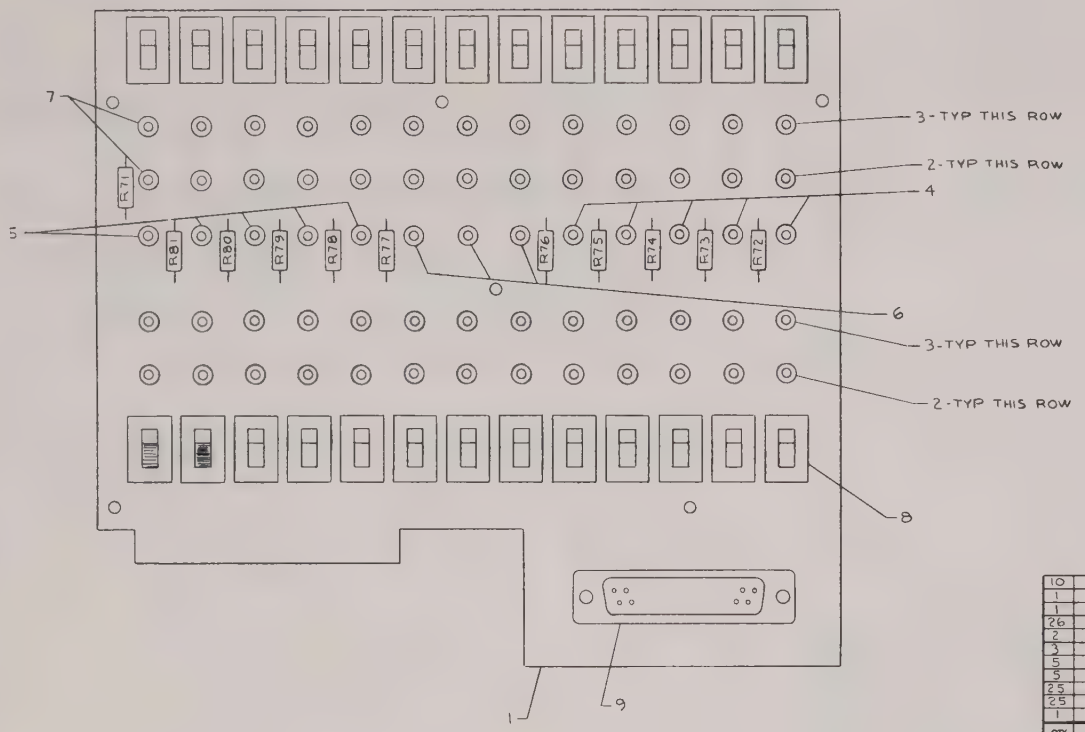
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CHECKED 4/16/70
PROJ ENGRG 2/2/72
PROD ENGRG

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DATA INTERFACE TEST SET ASSY (MODEL 505-2)

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REVISIONS				
NO/SYM	DESCRIPTION	DATE	BY	CHK	APPD

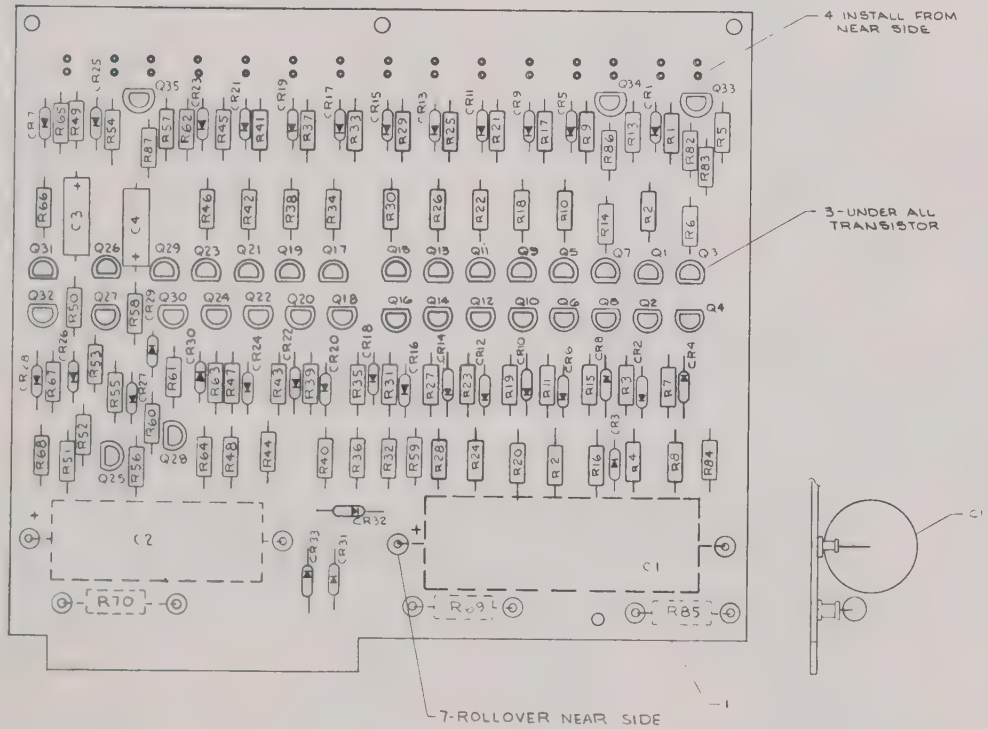


QTY REQD	CODE IDENT NUMBER	PART OR IDENT NUMBER	ITEM	NOMENCLATURE OR DESCRIPTION	NOTES & REF DESIGNATIONS
–1		LIST OF MATERIAL			
10		201-3301	11	RESISTOR 3.3K 1/2W 5%	R72 THRU R81
1		753-3011	10	RESISTOR 3.01K 1/2W 1%	R71
1		3650-0005	9	CONNECTOR	
26		3691-0007	8	SWITCH SLIDE	
2		B501656-6	7	VERTICAL JACK BLK	
3		B501656-5	6	" YEL	
5		B501656-4	5	" BLU	
5		B501656-3	4	" RED	2
25		B501656-2	3	" BRN	2
25		B501656-1	2	VERTICAL JACK WHT	
1		D501669	1	BOARD, PRINTED CIRCUIT	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	W. GLEASALL 31 OCT 67	PULSE COMMUNICATIONS, INC. ALEXANDRIA, VA.
TOLERANCES:	DRAWN G. LAYNE DATE 12/19/67	BOARD, P.C. ASSEMBLY (TEST SET MODEL 505-2)
2 PLACE DECIMALS ± —	CHECKED DATE 4/11/74	
3 PLACE DECIMALS ± —	PROJ ENGRG DATE 2/5/70	
ANGLES ±	PROD ENGRG DATE	
DO NOT SCALE DRAWING		
MATERIAL:		CODE IDENT NO. 22818 SIZE D DRAWING NUMBER D501668
FINISH:		SCALE 2/1 SHEET

ITEM	REFERENCE DESIGNATIONS
14	R1, R5, R9, R13, R17, R21, R25, R29, R33, R37 R41, R45, R51, R54, R59, R62, R65
16	R20, R24, R28, R32, R36, R40 R44, R48, R50, R58, R68
12	R19, R23, R27, R31, R35, R39, R43, R47, R67
13	R52, R60
15	R2, R6, R10, R14, R18, R22, R26, R30, R34, R38, R42, R46, R53, R61, R66
11	R3, R7, R11, R15, R55, R63
10	R4, R8, R12, R16, R56, R64
5	Q1, Q2, Q5, Q6, Q9 THRU Q27, Q31, Q32
18	Q3, Q4, Q7, Q8, Q28, Q29, Q30, Q33, Q34, Q35

REVISIONS					
NO/SYM	DESCRIPTION	DATE	BY	CHK	APPD
A	REV PER ACO 3298	9-3-69	PDL	W.G	W.C



NOTES:
1. EITHER 801-0461 OR B500034 MAY BE USED

QTY REQD	CODE IDENT NUMBER	PART OR IDENT NUMBER	ITEM	NOMENCLATURE OR DESCRIPTION	NOTES & REF DESIGNATIONS
1		202-3900	26	RESISTOR 390Ω 1W, 5%	R85
1		201-5600	25	RESISTOR 560Ω 1/2W, 5%	R84
1		201-1201	24	RESISTOR 1.2K 1/2W, 5%	R83
3		201-7500	23	RESISTOR 750Ω 1/2W 5%	R82, R86 R87
2		3348-0200	22	CAPACITOR 20μF 25V	C3 C4
1		202-3300	21	RESISTOR 330Ω 1W ± 5%	R70
1		203-1500	20	RESISTOR 150Ω 2W ± 5%	R69
2		201-3302	19	RESISTOR 33K 1/2 ± 5%	R49, R57
10		900-5447	18	TRANSISTOR, 2N5447	SEE TABLE
3		800-4384	17	DIODE IN4384	(R31 (R32 CR33
11		201-2202	16	RESISTOR 22K 1/2 ± 5%	
15		201-4701	15	4.7K	
17		201-2201	14	2.2K	
2		201-1002	13	10K	SEE TABLE
5		201-802	12	18K	
6		201-3902	11	39K	
6		201-4702	10	RESISTOR 47K 1/2W ± 5%	
1		3483-0003	9	CAPACITOR 1000 μF 25V	C2
1		3483-0006	8	CAPACITOR 2200 μF 25V	C1
10		610-008	7	TERMINAL, ROLLOVER	
30		SEE NOTE 1	6	DIODE, IN4604	CR1-CR30
25		900-5448	5	TRANSISTOR 2N5448	SEE TABLE
30		3499-0013	4	SPRING SOCKET	
85		52-6002	3	TRANSISTOR PADS	
REF		E200485	2	SCHEMATIC	
1		D501674	1	BOARD P.C.	

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DRAWN S. HUNG	1/31/69 DATE	PULSE COMMUNICATIONS, INC. ALEXANDRIA, VA.
TOLERANCES		2-9-69	BOARD P.C. ASSY (TEST SET 505-2)
2 PLACE DECIMALS ±	CHECKED	DATE 4/11/70	
3 PLACE DECIMALS ±	PROJ. ENGR.	DATE 2/11/70	
ANGLES ±	PROD. ENGR.	DATE	
DO NOT SCALE DRAWING			
MATERIAL			CODE IDENT NO. 22818 SIZE D DRAWING NUMBER D501670
FINISH			SCALE 2/1 SHEET

FIG. 2
POWER SUPPLY

FIG. 3
LINE LOADING RESISTOR CIRCUIT "ON" CONTR

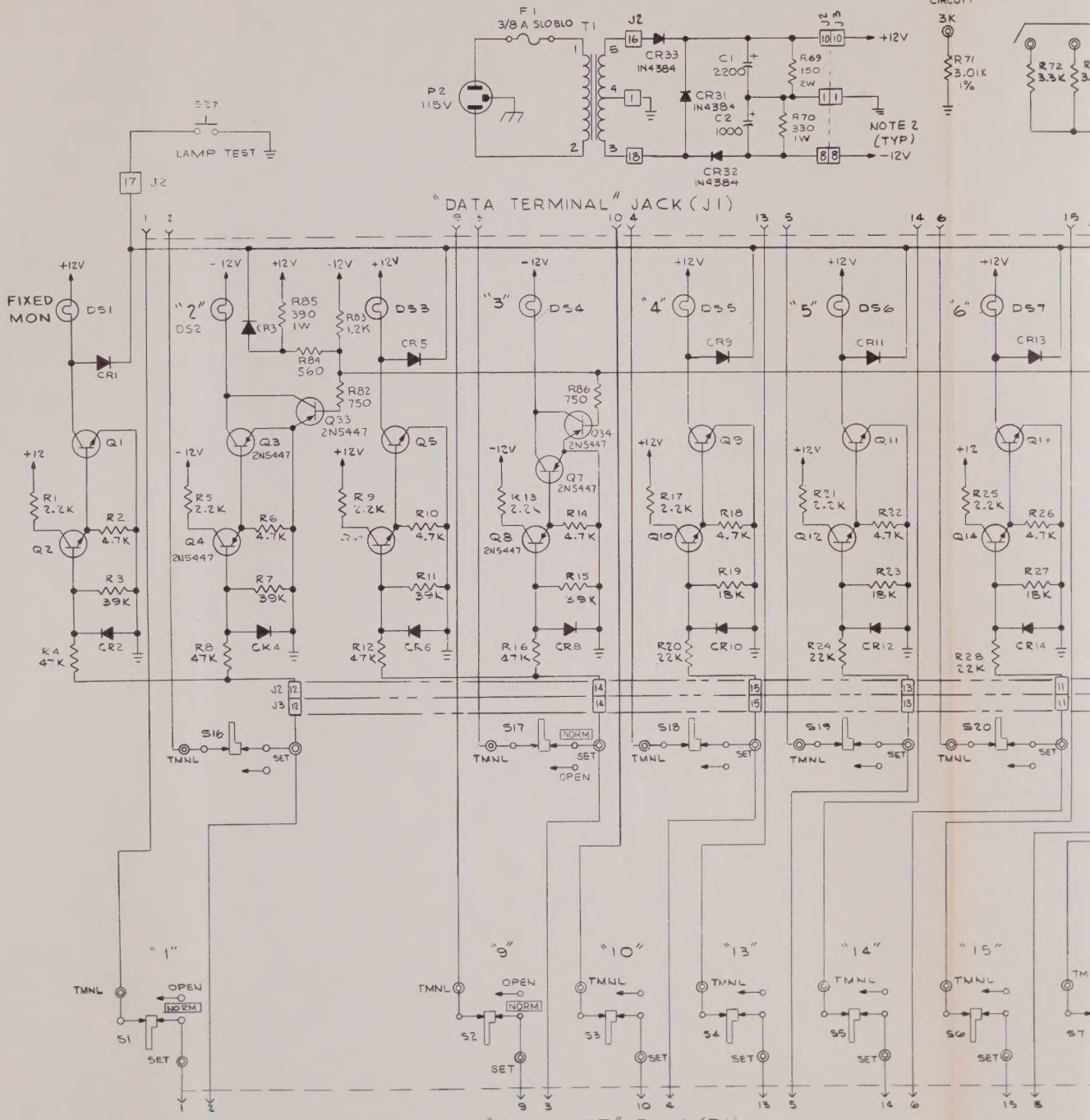


FIG. 1
INTERFACE LE
(EXCEPT LEAD

REVISIONS					
NO/SYM	DESCRIPTION	DATE	BY	CHK	APPD
A	REV PER ACO 3298	9-27-76	FDL	W.G	W.G

IG. 4
OL BATTERY

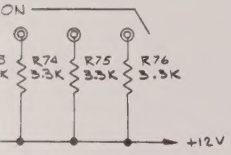


FIG. 5
"OFF" CONTROL BATTERY

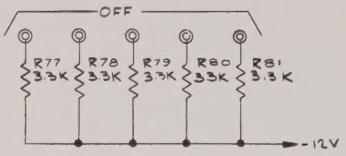
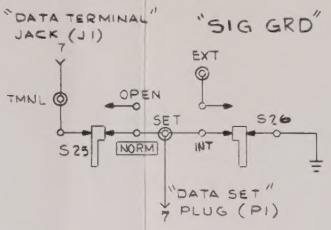
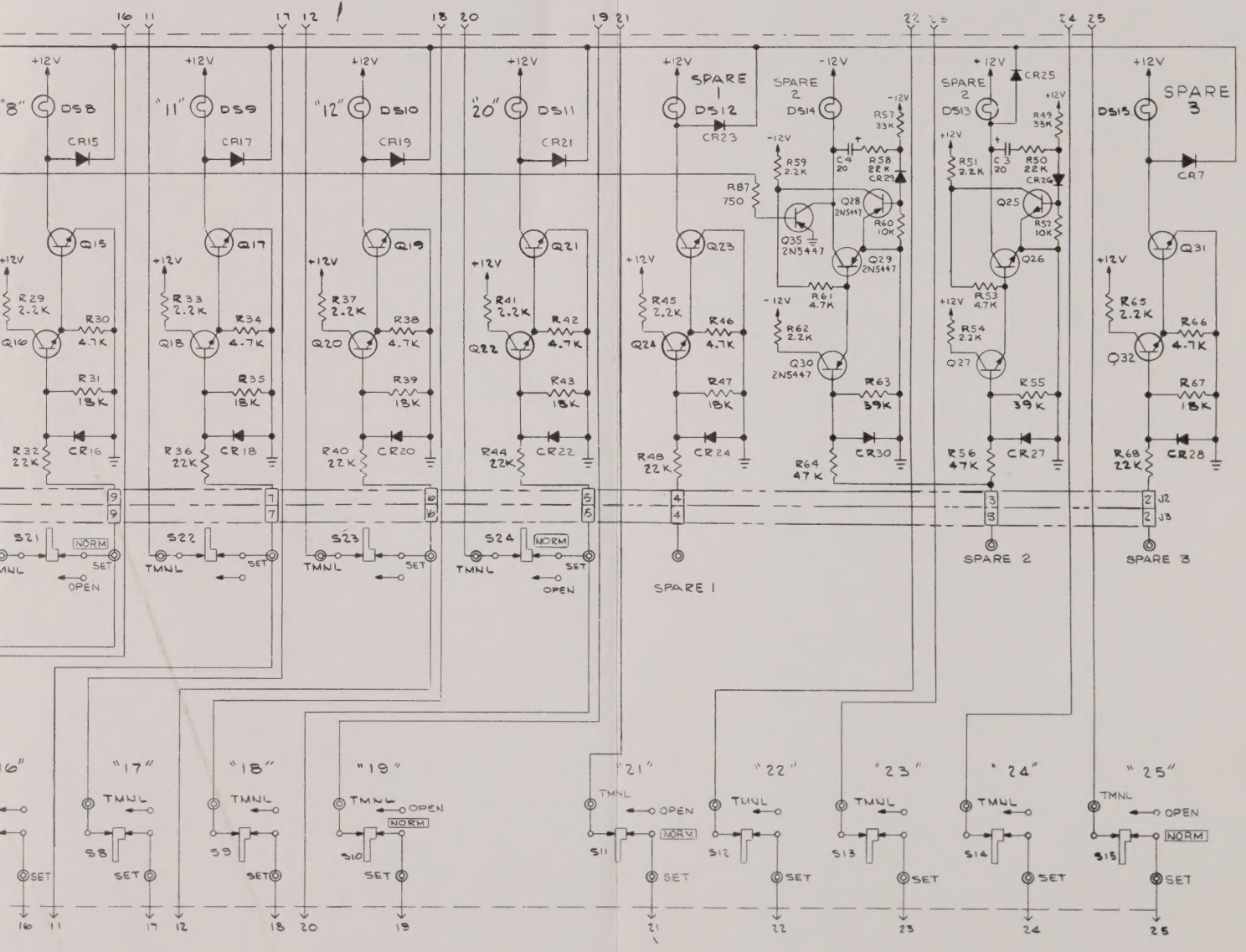


FIG. 6
INTERFACE LEAD 7 AND SIGNAL GROUND SELECTOR





NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTORS ARE IN OHMS, ½W, 5%.
   B. ALL CAPACITORS ARE IN µf.
   C. ALL DIODES ARE IN461A
   D. ALL TRANSISTORS ARE 2N5449
2. ALL TEST SET GROUNDS ARE ISOLATED FROM CHASSIS GROUND

QTY REQ'D	CODE IDENT. NO.	PART OR IDENT NUMBER	ITEM	NOMENCLATURE OR DESCRIPTION	NOTES & REF DESIGNATIONS
-1		LIST OF MATERIAL			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
2 PLACE DECIMALS ± ~
3 PLACE DECIMALS ± ~
ANGLES ± ~
DO NOT SCALE DRAWING
MATERIAL ~
FINISH ~

DRAWN 11-23-69
CHECKED 8/20/70
ENGR APPROV 11/20
PROD ENGRG 11/20/70

PULSE COMMUNICATIONS, INC. ALEXANDRIA, VA.

SCHEMATIC, DATA INTERFACE TEST SET, MODEL 505-2

COMM. ENGRG. NO. 22818 | SIZE E | DRAWING NUMBER E200483

SCALE ~ | SHEET

GENERAL INFORMATION

Rev. 8/73

The following information is furnished as an aid in obtaining service for equipment under warranty, and to outline the uses for which the manual is intended. Please note that only those units manufactured by Pulsecom are serviced at the Pulsecom factory. Attachments that are furnished as part of a system, but are not manufactured by Pulsecom, are serviced at locations designated by the equipment maker.

When returning equipment for repair under warranty, ship PULSECOM EQUIPMENT ONLY to Pulsecom Division, Harvey Hubbell, Inc., 5714 Columbia Pike, Falls Church, Virginia, 22041.

For your information, the following list sets forth the service address for equipment commonly furnished with PULSECOM systems. Also, the list mentions important details of the warranty. This information in no way substitutes, in whole or in part, for the full warranty as stated by the manufacturer. It is presented only as a guide.

GENERAL ELECTRIC COMPANY Repair and Return Department Mountain View Road Lynchburg, Virginia 24502 Attn. : Mr. E. Carr	One year parts and labor, except fuses and lamps
R.F.L. INDUSTRIES, INC. Customer Service Department Boonton, New Jersey, 07005 Attn. : Mr. William F. Fettes	One year parts and labor, except fuses and lamps
DURANT DIGITAL INSTRUMENTS A Cutler-Hammer Company Repair Department 901 S. 12th Street Watertown, Wisconsin, 53094	One year parts and labor, except fuses and lamps
TELETYPE CORPORATION 5555 Touhy Avenue Skokie, Illinois, 60076	Everything supplied will be free from defects of workmanship and materials

PULSECOM WARRANTY

The Purchaser has a reasonable time to ascertain whether the products are as represented. Tests made by the Purchaser shall be made within 60 days from date of shipment. The conditions of such tests shall be mutually agreed upon and PULSECOM shall be notified of and reserves the right to be represented at any test. There are no warranties after acceptance but the Company will repair or replace FOB factory any part which under normal and proper use proves defective in workmanship or material within one year from date of shipment hereunder, or within such extended or shortened period specified for a particular product in PULSECOM's sales literature or by special notification in writing by a principal officer of PULSECOM. The correction of such defects by repair or replacement shall constitute fulfillment of all PULSECOM's obligations with respect to the products sold hereunder.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY WHETHER WRITTEN, ORAL, OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

PROPRIETARY RIGHTS -- The data furnished in this manual is proprietary and is for the purpose of engineering reference, maintenance, and instruction. The furnishing of said data in no way conveys to the recipient or the purchaser the right to reproduce the data or to manufacture the equipment herein described. Further, the recipient or purchaser is not authorized to disclose said data to anyone for any reasons other than those outlined above without written consent of PULSECOM.

INCOMING INSPECTION -- If the container in which your equipment is received shows damage, or if upon unpacking the equipment, damage is discovered, an immediate request should be made to the delivering carrier to perform an inspection and to prepare a damage report.

CAUTION

These instructions may contain recommendations for particular wiring within and into equipment from other manufacturers. We have tried to make these recommendations accurate, and where possible, we have tested the instructions with the equipment listed. Since PULSECOM has no control over design improvement changes in the other equipment, it cannot guarantee the applicability of interconnecting instructions and we strongly urge you to confirm compliance between the drawings furnished and the other equipment. Specific installation instructions are available on an individual application basis--contact the PULSECOM marketing group for details.

PULSECOM REPAIR POLICY

REPAIRS UNDER WARRANTY

All Pulsecom products are covered by warranty, limited in strict accordance with the warranty statement on the reverse side. This warranty provides for the repair of equipment which becomes defective because of defective components or poor workmanship.

The warranty does not normally include transportation to our plant. However, items repaired under warranty are returned, prepaid by Pulsecom, to any point within the United States. Warranty repair shipments sent to Pulsecom collect will be returned to the customer collect. Non-warranty repair returns must be pre-paid by customer.

NON-WARRANTY REPAIRS

Normal out-of-warranty repairs shall be charged as follows:

A. Size A (1-1/2" wide) telephone equipment cards	$10.00
B. All other PC cards which sell for less than $200	$25.00
C. PC cards which sell for $200 or more	12-1/2% of replacement cost
D. Assemblies	$15.00 per hour plus parts (1.0 hour min.)

In the case of unusually extensive repairs required for PC cards, charges shall be made on the same basis specified for assemblies.

If a piece of equipment is received and no defect can be found, it will be marked and returned to the customer, and billing will be rendered at the standard rates specified above (whether or not the item is within its warranty period). If the customer still finds something wrong, he should return the unit, explaining the application, installation, and failure mode in as much detail as possible so that we can duplicate the conditions. If we still cannot find the problem, we will contact the customer for consultation.

SERVICE

Equipment is normally returned to the customer within three weeks after receipt at Pulsecom. Emergency repairs may be provided in 72 hours if the customer makes arrangements prior to Pulsecom's receipt of the equipment.

RETURNS FOR REPAIR

Equipment for repair should be returned to the Pulsecom Repair Department and identified with a tag indicating the problem. Special instructions, i.e., desired modification, should be noted on the packing slip.

NOTE

Items modified by customers for special features will be returned to the standard Pulsecom configuration with time billed accordingly unless detailed modification instructions and/or documentation are provided.

PACKAGING

Any equipment returned should be packaged to insure safe arrival at Pulsecom.

RETURNS FOR CREDIT

Material to be returned for credit must have prior Pulsecom approval and be so identified to allow proper credit to be given. If replacement or loan equipment is furnished, it will be accompanied by a "Return for Credit" tag (P.C. Form #166) which will be attached to the equipment when it is returned.